



Trabajo Final de Graduación para optar por el título Bachiller en Ingeniería en Computación

Krill Project and iPhone Vidcam

Dennis Valverde Pacheco

Carrera Ingeniería en Computación

Instituto Tecnológico de Costa Rica

Prof. Asesor: Abel Méndez Porras

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Executive Summary

This final internship report explains the description and solution of the projects developed in Avantek Software in this internship time. Finally is available a conclusion and recommendations section for bring an opinion about the knowledge and experience obtained.

In the first stage of the internship the project assigned was Krill, a solution for the costumers that haven't time to leave in search of products or services. In this project was necessary start the specification and requirements process for to define the application.

Krill will use machine learning and classification algorithms, the research about these technologies were necessary in this stage. After that, some changes in the people and projects caused the change in the project.

The new project is the iPhone Vidcam, a solution for control security cameras from a mobile device, in this case the iPhone or iPad. This application allows the user add your cameras and monitor them from the device.

For this project was necessary to learn iPhone development. The work in this project was oriented to fix several bugs of the last version and develop new features for the new version.

The description of these projects and solution implemented will be explained in this document.

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1. Context of the project

Actually, the software companies work for bring to the people solutions and facilities for make their life more comfortable and easier. In this internship, two projects have been worked, each with different approaches and participation.

The first project is named Krill, this project is a solution for the costumers that need products in the market and don't have time to do their errands. The second is iPhone Vidcam a mobile application oriented to cameras monitoring; this application is for an enterprise in United States named Total Control.

In the first project only was necessary to work in the definition stage, this stage includes the description of the project, scopes and requirements. Also was necessary to start the research about the technologies for the development stage. The development stage will be work for another team.

In iPhone Vidcam was necessary to develop some features of the application and fix some bugs from the last version. Details will be showed in other sections in this document.

Then, two enterprises have participated in this internship, Avantek Software is the company where the applications were developed and Total Control is the client of iPhone Vidcam application developed in the internship.

1.1 Avantek Software

The description below was taken from the Avantek website [1]:

"This hi-tech company business model is Information Technology based on the following services:

- Software Development Services
- Outsourcing
- Custom made software

The enterprise is constantly evolving to provide the best solution to the clients supported by the excellence of our people and the constant implementation of values. Avantek is currently recognized as the most efficient and effective Software Company of Costa Rica's northern zone. Avantek has proficient in software developing and outsourcing services and always is looking for new challenges that will be supported by experience and quality. The people are committed to excel in the creation of cost-effective production environments. The company wants to work with the costumers to exceed your expectations and accomplish exceptional business results.”

1.2 Organization chart

The project will be developed in the production department. This department is showed in the Figure 1, this is the organization chart of Avantek Software.

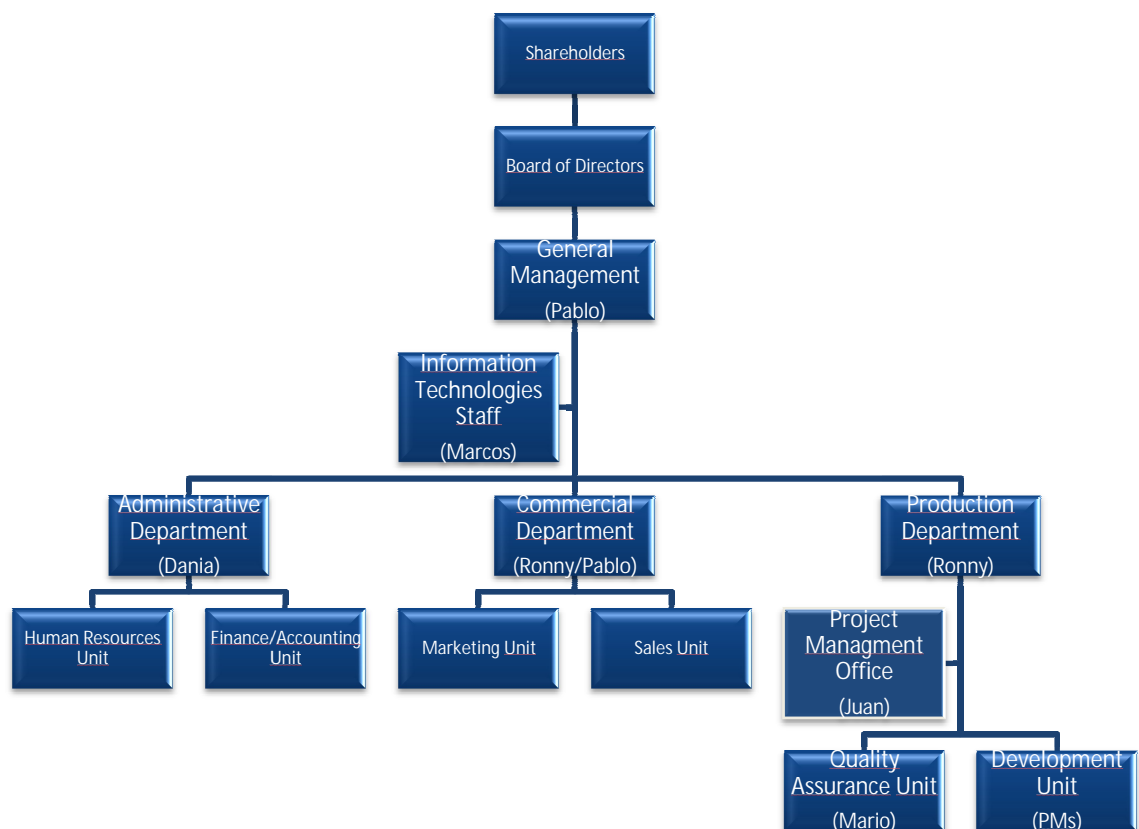


Figure 1. Organization chart of Avantek Software

1.3 Total Control

The description below was taken from the Total Control website [2]:

“We are committed to providing our customers with the best products on the market, as well as excellent support. The primary goals are outlined below:

- To produce high quality software for mobile phones and handheld devices.
- To provide a professional, excellent and rapid service for all of our customers.
- To drive the industry and market forward with innovative software.”

2. Technologies

About the technologies used in this internship, the two stages (Krill and iPhone Vidcam) had different technologies. In the Krill project the developer team did research about which tools and technologies were necessary for develop the application.

In Krill, after an extensible research the developer team chooses PHP like the language for the frontend of the application and java for the backend.

PHP is an interpreted language oriented of the server side. PHP is a widely-used general-purpose scripting language that is especially suited for Web development and can be embedded into HTML [3].

HTML, which stands for HyperText Markup Language, is the predominant markup language for web pages. HTML is the basic building-blocks of webpages. The purpose of a web browser is to read HTML documents and compose them into visual or audible web pages. The browser does not display the HTML tags, but uses the tags to interpret the content of the page. [4]

Java is a programming language originally developed by James Gosling at Sun Microsystems (which is now a subsidiary of Oracle Corporation) and released in 1995 as a core component of Sun Microsystems' Java platform. The language derives much of its syntax from C and C++ but has a simpler object model and fewer low-level facilities.[5]

Java allows you to play online games, chat with people around the world, calculate your mortgage interest, and view images in 3D, just to name a few. It's also integral to the intranet applications and other e-business solutions that are the foundation of corporate computing. [6]

MySQL will be the database administrator for store and access the information and the Krill's Brain will be implementing with a Solr server and several algorithms of machine learning.

MySQL is the most famous open source database in the world [7] and Solr is the popular, blazing fast open source enterprise search platform from the Apache Lucene project. Its major features include powerful full-text search, hit highlighting, faceted search, dynamic clustering, database integration, rich document (e.g., Word, PDF) handling, and geospatial

search. Solr is highly scalable, providing distributed search and index replication, and it powers the search and navigation features of many of the world's largest internet sites. [8]

iPhone Vidcam is an application developed for mobile devices working with IOS, the programming language to work will be Objective C and the information will be store in XML files and internal memory in the device using some structures provided by IOS.

IOS is an Operating System created by Apple Corp. Objective C is the programming language for Apple devices like MAC Books, iPhones and iPads for example.

The Objective-C language is a simple computer language designed to enable sophisticated object-oriented programming. Objective-C is defined as a small but powerful set of extensions to the standard ANSI C language. Its additions to C are mostly based on Smalltalk, one of the first object-oriented programming languages. Objective-C is designed to give C full object-oriented programming capabilities, and to do so in a simple and straightforward way. [9]

3. Project description

This internship had two projects developed, for this reason is necessary describe both in different sections for a better comprehension.

In the first stage of the internship the Krill project presented a design process and requirements description, while the iPhone Vidcam represented a development effort. Because both projects were included in the intern-ship, in this section will describe both of them.

3.1 Krill project

3.1.1 Description

Krill is a software solution that has like main objective re-define the way how the people consume the products and services in the market. Krill provides a platform that allow to the customers and sellers to innovate their market process.

The application offers an indirect communication between customer and seller, but guarantees to the customers only receive information about items that are interest for them. Also the sellers obtain people with high probability to buy their products or services.

Many people have busy jobs, and they don't have time for their personal errands, in most cases to leave from the job for a moment means miss money or work late.

Krill offers to the customers a solution where they don't miss more time searching a product, they don't leave from their jobs and in five minutes request a product in the market. The customer only has to write the name or a small description of the product and Krill sends request to the sellers that have this item.

The sellers will receive the request from the customers and will contact with them and the seller will offer the products or promotions about only the item that the customer is searching. Fast and easy the seller knows which customer need their products and will offer it to him.

3.1.2 Target market

Krill has two Target Markets one is the Customer Client and other is the Seller Client. Krill makes marketing for the Seller Clients and its merchandise, to a new form to sale and for the Customers Clients a new form to shop.

Customer Client: are clients like the people busy, than doesn't have time to go out to search anything that they need, for an example: a person than work in a bank and don't has time to go to seek a wheels for his car. Or people that not know where can go for shopping.

Seller Client: this is the client that has a store and this store need expand the market, get more publicity and save time for attend people that buy something in this store, for an example: a store that sells parts of carts and other things.

The match for the Customer Client and for the Seller Client is the Target Market for the Krill Shopping; this match is the functionality of Krill, the way to combine needs with offers.

3.1.3 Stakeholders and team

The stakeholders are:

- **Consumers:** Final clients. Consumers will be users submitting search requests for products/services they need to find.
- **Providers:** Sellers or service providers.

The team is conformed for a Project Manager (PM) and two developers. The PM is an experimented member of the company and the developers are university students doing their internship. The members of the team are:

- **Erick Vargas:** Software Architect in Avantek Software. He is the Project Manager and the person in charge of the project.
- **Fabián Campos and Dennis Valverde:** University students doing their internship in Avantek Software. They are in charge to develop the system.

3.1.4 Requirements

With the purpose of facilitating requirement handling, it is advisable to use a classification such as:

Krill Brain: this is the key portion of the system. It matches the customer search string with potential sellers.

Krill Web UI: this is a basic simple web interface for the Krill Brain.

- Customer Frontend: is the public user interface area where users submit searches.
- Admin backend: is the administration panel where customers or commerce managers can change/update their profile information.

This is the requirements list:

UI Frontend

Requirement ID	UI-F-1
Name	User Login
Description	Users will be able to login to the system using their email as username and password.
Category	UI Frontend
Dependencies	
Priority	Must have.

Requirement ID	UI-F-2
Name	Remember Account.
Description	Users will be able to choose a "remember me" option when login in.
Category	UI Frontend
Dependencies	UI-F-1
Priority	Nice to have.

Requirement ID	UI-F-3
Name	Link Facebook account.
Description	Users will be able to register or login to the system using their Facebook account. This action allows the system get the user's profile information from Facebook (Make easier the register or login).
Category	UI Frontend
Dependencies	UI-F-1
Priority	Must have.

Requirement ID	UI-F-4
Name	User registration.
Description	Users will be able to register using just email and password or providing their Facebook account credentials. Upon registration, user will have to choose from a consumer or provider account type
Category	UI Frontend
Dependencies	UI-F-1
Priority	Must have.

Requirement ID	UI-F-5
Name	Invite friends.
Description	Once registered, users will be able to invite other users to use Krill. Friends list will be fetched from Facebook or Twitter.
Category	UI Frontend
Dependencies	
Priority	Nice to have.

Requirement ID	UI-F-6
Name	Submit query.
Description	Consumers will be able to enter their queries using a large textbox in the home page. For non registered users, system will ask for a notification email, and create an account in the background with a temporary password.
Category	UI Frontend
Dependencies	
Priority	Must Have

Requirement ID	UI-F-7
Name	Show query results.
Description	When submitting a query, consumers will be presented with a list of providers, including the contact information the providers accepted to share in the results. The results will be ordered based on geographic location (nearest first), and matching score (highest first).
Category	UI Frontend
Dependencies	UI-F-6
Priority	Must to have.

Requirement ID	UI-F-8
Name	Advertising
Description	Allow providers to advertise in the home page and/or search results.
Category	UI Frontend
Dependencies	
Priority	Nice to have.

UI Backend

Requirement ID	UI-B-1
Name	User Profile
Description	Users will be able to complete additional optional information in their profiles once their account is created. This information is: name, phone, address, occupation, preferences and age.
Category	UI Backend
Dependencies	UI-F-4
Priority	Must have.

Requirement ID	UI-B-2
Name	User Preferences Profile
Description	Users will be able to update the notification preferences in their profile preferences page. The notifications are showed in the system but the user may to receive it by SMS or email too. The user will be able to choose how receive the notifications: daily, weekly, per each match. Also the user can choose if wants receive notifications for the following actions: User's messages, customer's ratings, change of state of a match.
Category	UI Backend
Dependencies	UI-F-4, UI-B-1
Priority	Must have.

Requirement ID	UI-B-3
Name	Backend link
Description	Logged in users will have a link somewhere that will take them to their profiles and preferences page.
Category	UI Backend
Dependencies	UI-F-4, UI-B1-, UI-B-2
Priority	Must have.

Requirement ID	UI-B-4
Name	Consumer History.
Description	Users will be able to see a history of searched items, and change the status of the search to something like "Completed by [Provider]". This history will allow to the users manage the ratings and the status of their searches.
Category	UI Backend
Dependencies	UI-F-4
Priority	Nice to have.

Requirement ID	UI-B-5
Name	Provider History.
Description	Providers will be able to see a list of matched searched items, and change the status of the search to something like "Provided to [Consumer]". The Provider can check that was he provide to a specific Consumer and say it is completed or not.
Category	UI Backend
Dependencies	UI-F-4

Priority	Nice to have.
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Requirement ID	UI-B-6
Name	Consumer Rating Score
Description	Users will be able to assign a rating to the completed transactions based on a five star metric, and also provide comments. This point is for completed transactions when the Consumer gives a score and the Provider approved the sale, not approve the score only the sale.
Category	UI Backend
Dependencies	
Priority	Must have.

Requirement ID	UI-B-7
Name	Provider Rating Score
Description	Providers will be able to see their rating score. The rating score is important for get a good result of the match; the better score are the better result of the match.
Category	UI Backend
Dependencies	
Priority	Must have.

Requirement ID	UI-B-8
Name	Matching Preferences
Description	Providers will be able to update their "matching" preferences. The "matching" preferences are categorization properties that describe the type of Provider.
Category	UI Backend
Dependencies	
Priority	Must have.

Krill Brain

Requirement ID	KB-1
Name	Input parameter
Description	The customer only types a query and waits for results. The input is this query".
Category	Krill Brain
Dependencies	
Priority	Must have.

Requirement ID	KB-2
Name	Output
Description	The system's output is the list of the potential providers about the customer's search.
Category	Krill Brain
Dependencies	KB-1
Priority	Must have.

Requirement ID	KB-3
Name	Scoring of the results.
Description	Each result has a scoring given by the system; this score represents the successful grade of the matching.
Category	Krill Brain
Dependencies	KB-1
Priority	Must have.

3.1.5 Scopes

Each scope has a priority. This priority could be high or low, when a scope has high priority means that it must be implementing in the internship, in other hand when its priority is low means that could be implemented in the future after of the internship.

Krill Web FrontEnd UI

- Advertising: this will be done in a later stage. Low priority.
- Users will be able to login to the system using their email as username and password. Thus the system guarantees that the user doesn't repeat their usernames. High priority.
- Non registered consumers will be able to submit a "quick search", which will require them to enter an email. To this email are send a temporary password to create an account that the user can be updating in the future. High priority.
- Users will be able to choose a "remember me" option when login in. Low priority.
- Users will be able to register or login to the system using their Facebook account. This action allows to the system get the user's profile information from Facebook (Make easier the register or login). High priority.
- Users will be able to register using just email and password. Thus the user's register is quickest. High priority.
- Users will choose the type of registration: Consumer or Provider. If the user is a provider must complete the register form, this form requires an enterprise name, email, address, phone, and password and provides several key words for the Krill brain. High priority.
- When submitting a "search string", consumers will be presented with a list of providers, including the contact information the providers accepted to share in the search results. The results will be ordered based on geographic location (nearest first), and matching score. The geographic position is included in the profile of the users and if this isn't completed will be calculated by an algorithm. High priority.
- The user will be able to invite friends to use the system. The friend list will be fetched from Facebook or Twitter. Low priority.

Krill Web Admin Backend UI

- Users will be able to complete additional optional information in their profiles once their account is created. This information is: name, phone, address, occupation, preferences and age. High priority.
- Users will be able to update the notification preferences in their profile preferences page. The notifications are showed in the system but the user may to receive it by SMS or email too. The user will be able to choose how receive the notifications: daily, weekly, per each match. Also the user can choose if wants receive notifications for the following actions: User's messages, customer's ratings, change of state of a match. High priority.
- Users will be able to login to the system using their email as username and password. When you edit your profile you can create a username for use this like your user account and get more privacy, besides don't share the email. High priority.
- Users will be able to see a history of searched items, and change the status of the search to something like "Completed by [Provider]". This history will allow to the users manage the ratings and the status of their searches. Low priority.
- Providers will be able to see a list of matched searched items, and change the status of the search to something like "Provided to [Consumer]". The Provider can check that was he provide to a specific Consumer and say it is completed or not. Low priority.
- Users will be able to assign a rating to the completed transactions based on a five star metric, and also provide comments. This point is for completed transactions when the Consumer give a score and the Provider approved the sale, not approve the score only the sale. High priority.
- Providers will be able to see their rating score. The rating score is import for get a good result of the match; the better score are the better result of the match. High priority.
- Providers will be able to update their "matching" preferences. The "matching" preferences are a tags for describe the type of Provider and the system use this information for create a better match. High priority.

Krill Brain

- The customer only types a “search string” and waits for results. The input is this “search string”. High priority.
- The system's output is the list of the potential providers about the customer's search. High priority.
- Each result has a scoring given by the system; this score represents the successful grade of the matching. High priority.

3.2 iPhone Vidcam

3.2.1 Description

The first application to work on is the IPhoneVidcam, which is a solution for the people with security needs. This application allows the user see and monitors his video cameras from a device with Apple IOS or Android operating system.

IPhoneVidcam is one application of the Video Camera Edition family, distributed by Total Control, this family includes the same application in Blackberry and Windows Mobile.

The Figure 2 presents how in the first screen IphoneVidcam show the list of cameras added by the user. In this screen the user choose the cam to see.

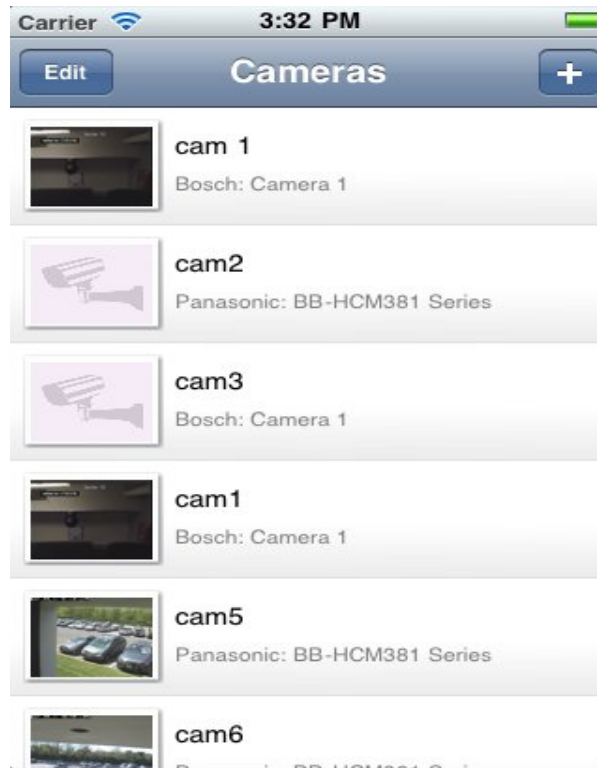


Figure 2 User's cameras list.

The user can to use the application in his iPhone but also is available in other devices like iPad. If the user wants to run the app in his iPad is necessary to consider the following aspects:

- For the Vidcam application on wifi connections we use whatever resolution the cctv hardware is setup for. If you want to change the resolution of the video just change the resolution on the cctv hardware itself.
- You will need to use the scaling function to blow up the application view size however for the actual video size and quality please refers to the notes below for an optimal experience.
- The Ipad has a native resolution of 1024x768 so to enjoy a full screen experience on wifi you will need to change your cctv hardware resolution to match it as closely as possible.

- Any size larger than or equal to the Ipad resolution will be formatted to fit the whole screen resolution.
- Any size smaller will use the scaling function which at some point will look pixelated. i.e. a 320x240 cctv hardware resolution will look pixelated when scaled on the Ipad's 1024x768 resolution.
- Cellular: Currently for cellular due to bandwidth restrictions the video may be scaled to iPhone/iTouch resolutions and will not be optimal for the Ipad. This is not the case on all CCTV hardware so results may vary.

Total Control has the single camera 'Singlecam' edition for control and viewing of one supported camera or video encoder as well as Multicam versions for viewing/controlling multiple supported cameras and video encoders (for analog camera & DVR support). All versions support the same functions and are named according to how many video feeds they support (i.e. if you want to support 4 video feeds then you will purchase Multicam4 edition).

The following versions are currently available via the App Store:

- Singlecam
- Multicam4
- Multicam8
- Multicam16
- Multicam32
- Multicam64

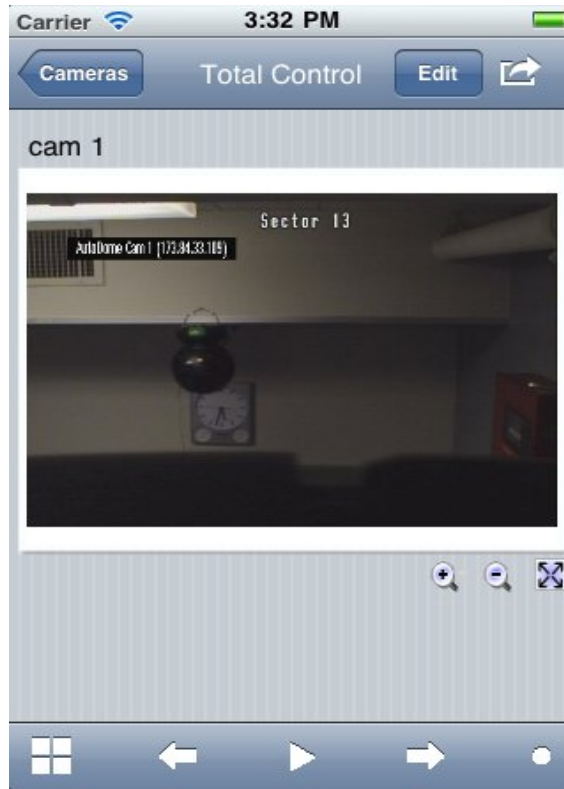


Figure 3 Single Cam View

3.2.2Vidcam features

The following list, presents the main features of the Video Camera Edition family, includes the iPhone, Android and Blackberry versions:

- Support for up to **1, 4, 8, 16, 32, or 64** dvr channels, ip cameras and video encoder streams (depending on version).
- Support for cellular and wifi (BES option also for Blackberry).
- Single & MultiChannel video encoder support (selected models) for analog camera support.
- Support for authentication.
- Support for Pan, Tilt, & Zoom (on supported models).
- Use of swipes Pan & Tilt as well as pinches for Zoom.
- Ability to change ip address and port as desired for internal and remote use.

- Support for over 100 manufacturers and 500+ models - Total Control Compatibility List [Click Here](#).
- Direct stream connection. No video going through 3rd party servers.
- No monthly or annual subscriptions.
- Function to easily change cameras while viewing. 'Previous Camera' and 'Next Camera' function in menu while viewing to automatically change camera.
- Function to automatically rotate through cameras based on time period. For instance set the application to rotate to the next camera every 30 seconds automatically.
- Support for landscape and portrait mode (on supported mobile devices).
- Jpg snapshot capability (while viewing live stream) to save to your local photo gallery.
- Support for MJPG and JPG codecs as supported. Mjpg is preferred method of video streaming when supported. Jpg used for jpg refresh (when mjpg not supported) and snapshots.

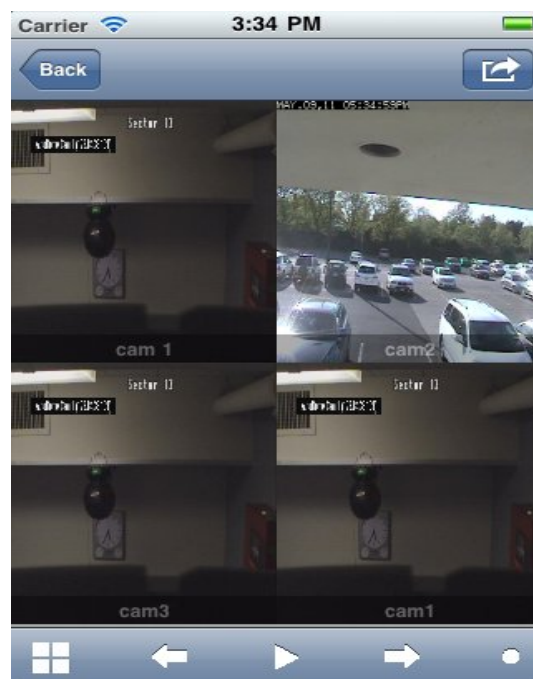


Figure 4 Multichannel Mode (View with four cameras)

3.2.3 Compatible Manufacturers

The Figure 5 bellow presents a list of manufactures that are supported by iPhone Vidcam. This list grows day to day providing to the users more variety of cameras to add in their applications.

The main manufacturers supported are:



Figure 5 Manufacturers supported

3.2.4 Development team

The team is comprised by a Project Manager (PM) and one developer. The PM is an experimented member of the company and the developers are university students doing their internship. The members of the team are:

Erick Vargas: Software Architect in AvantekSoftware. He is the Project Manager and the person in charge of the project.

Dennis Valverde: University student doing his internship in Avantek Software. He is in charge to fix some bugs from the last version and develop new features of the iPhone Vidcam new version.

4. Solution

For this internship is necessary to explain the solution since two views, the first one the solution to the description, search of the requirements and scope analysis for Krill project, and the second view is all development process in the iPhone Vidcam.

The time distribution was more oriented to iPhone Vidcam, because it the more worked solution was in this application.

4.1 Krill project

The first step for this solution was define the project and the desired requirements, for do it was necessary several meetings in the development team and the project manager for find a definition for the project and define goals and scopes. This is the key for the success.

After that, already finished all definition was necessary to set the technologies that be used for develop the application, this time was very important in the process because represent a very important decision.

The solutions for this decision was oriented in the researching, this project includes several new technologies never worked in the company. For example, was necessary search a tool for the product classification, in this moment machine learning was an option, for one or two weeks the development team was researching about machine learning technologies.

After of this researching a new option was implement a Solr server for the classification [8], it meant a new research. This spent more time but was necessary do it per find the best solution for Krill. For the frontend the main options was to use a PHP implementation or implement Java [6].

When the development stage started, this project was reassigned per iPhone Vidcam, this is the reason why this report only include the solution for the first stage of the project.

- Fix some errors of the last version of iPhone Vidcam.
- Develop new requirements in the new version of the application.

In resume, in Krill project only was necessary to work in the definition stage, this stage includes the description of the project, scopes and requirements. Also was necessary to start the research about the technologies for the development stage. The development stage will be work for another team.

4.2 iPhone Vidcam

The solution for this project was oriented in fix some “bugs” in the last version of iPhone Vidcam and develop new functionalities require by the client for the next version.

The first step was to learn development in IOS, however thanks to the experience in the “Comunidad de aplicaciones Móviles del Instituto Tecnológico de Costa Rica”, made this process less difficult.

After a week of training the development time start.

4.2.1 Fixed bugs

- *In multichannel mode do not appear the names of the cameras*

The solution for this bug was to implement a message label in each camera in multichannel mode. This label show the name of the camera to the user, was necessary be careful with the opacity of the label for don't confuse it with the image texture.

The Figure 4 showed above, has four cameras with their respective name.

- *In multichannel mode does not appear the names of the cameras*

This problem was resolved like the previous problem.

- *Live view name is too dark*

Was necessary set a correct opacity level, according the requirements of the client.

- *On landscape mode there should be no bottom bar*

The top and bottom tabs are not there and disappear to full screen video. For solve this problem the developer had to reconfigure some views and reset some timers in the navigator bar that caused this problem.

- *Bottom toolbar misplaced after tap twice on camera stream on multicam*

This problem was resolved like the previous problem.

- *Tap on timeout doesn't work in multichannel mode*

Was necessary re-configure the way to do the taps in multichannel mode. A long press over a camera shows it in single cam and a simple tap reconnect the camera if it has connection problems.

- *Quick select goes from 4 to 8 cameras directly in multichannel mode*

The last version was a little problem when the users would want change their four cameras view to six cameras, the app skip it and shown eight cameras. Was necessary added a six cameras option in the menu and add a new parameter that allow to the user see the app with six cameras in the view.

- *Application shows gray screen*

When the users had less cameras than the maximum capacity in the view the screen was gray in the free spaces, for example, the user had seven cameras and the app was in multichannel mode with a capacity of 32 cameras, in this case the app showed the seven cameras and in the 25 free spaces showed gray squares.

For solve this situation was implemented a method for insert a image in each free space with the legend “No Camera”. The Figure 6 show how was resolved this error.

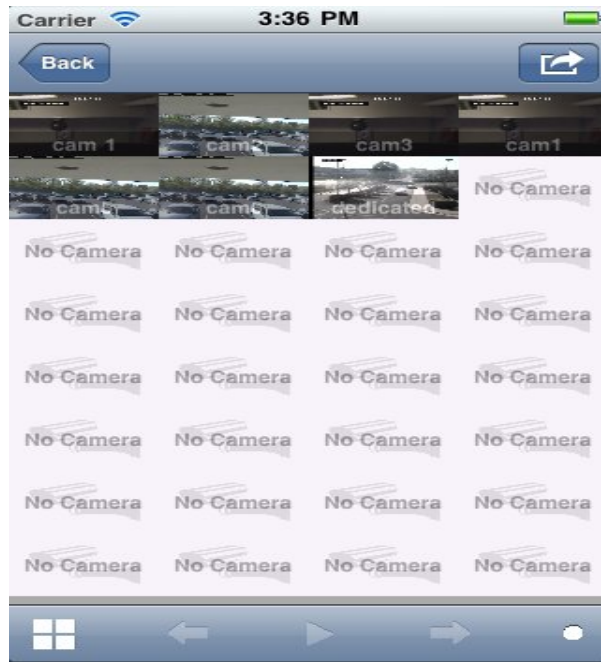


Figure 6 Resolved the problem with the gray spaces.

4.2.2 New features implemented

After resolved the bugs in the last version, was necessary begin with the development of new requirements by the client.

➤ *Add custom url scheme*

This is a very interesting way to run the application. With Url schemes, the IOS (iPhone Operating System) allows to the user open his application with a web reference.

For example, if the user has many app installed in the device, he can open the searched application since Safari using a simple word. This feature was implemented in the iPhone Vidcam.

The Figure 7 shows how the user now can run iPhone since Safari only typing “totalcontrol://” in the explorer.

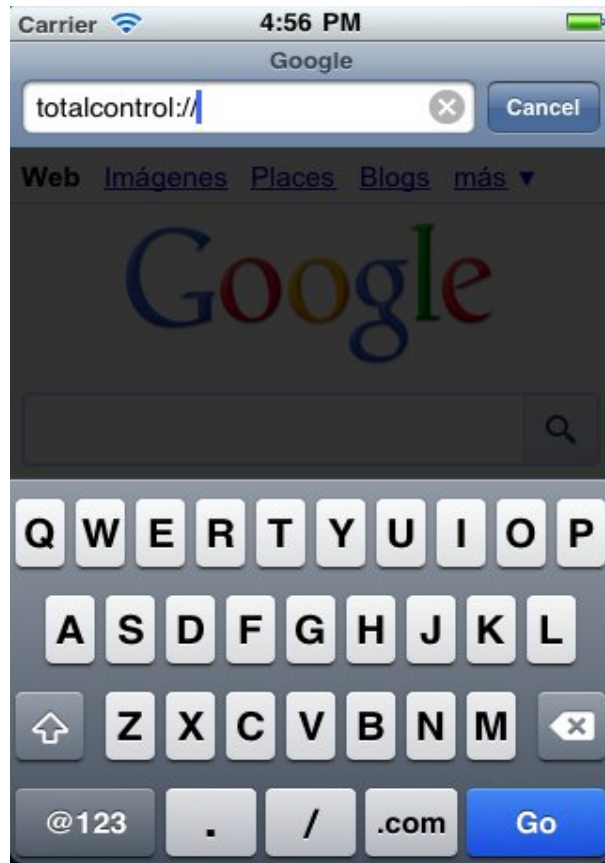


Figure 7 Open the app since Safari.

➤ *Default number of cameras setting iphone*

This option allow to the user choose how many cameras wants show when open for first occasion the multichannel mode.

➤ *View camera group setting iphone.*

This option is for multichannel mode too, the user can choose if wants to show the first group of cameras in the default number of cameras setting, or if wants see the latest cameras seen.

➤ *Add multichannel option in autostart*

This option allow to the user start with the multichannel mode when the application is started.

The last three options are showed in the settings menu; the Figure 8 shows how these options are available for the user.



Figure 8 Settings menu.

In the enterprise all projects are administered with a tool named Jira, the Figure 9 and Figure 10 shows all task assigned to the development team. Is very important to verify that all bugs are fixed in the internship.

	TOTALCTRL-80	not available Multichannel in landscape mode	Dennis Valverde Pacheco	Nergil Rodriguez Gonzalez	  Verified	Fixed	23/Mar/11	13/May/11
	TOTALCTRL-81	The application doesn't display the camera name on the Landscape mode	Dennis Valverde Pacheco	Nergil Rodriguez Gonzalez	  Verified	Fixed	23/Mar/11	13/May/11
	TOTALCTRL-83	The icon of the Multichannel button should be something meaningful	Dennis Valverde Pacheco	Nergil Rodriguez Gonzalez	  Verified	Wontfix	23/Mar/11	13/May/11
	TOTALCTRL-84	In multichannel mode does not appear the names of the cameras	Dennis Valverde Pacheco	Nergil Rodriguez Gonzalez	  Verified	Fixed	23/Mar/11	13/May/11
	TOTALCTRL-85	The empty fields of multichannel not indicate anything.	Dennis Valverde Pacheco	Nergil Rodriguez Gonzalez	  Verified	Fixed	23/Mar/11	13/May/11
	TOTALCTRL-86	The default view selected in the multichannel does not match the current view	Dennis Valverde Pacheco	Nergil Rodriguez Gonzalez	  Verified	Fixed	23/Mar/11	13/May/11
	TOTALCTRL-87	Fields without camera, change the format using the next and preview buttons	Dennis Valverde Pacheco	Nergil Rodriguez Gonzalez	  Verified	Fixed	23/Mar/11	13/May/11
	TOTALCTRL-88	The application quits unexpectedly	Erick Vargas	Nergil Rodriguez Gonzalez	  Verified	Fixed	23/Mar/11	13/May/11
	TOTALCTRL-89	The camera snapshot is not working on the camera list	Erick Vargas	Erick Vargas	  Verified	Fixed	28/Mar/11	13/May/11
	TOTALCTRL-90	Live view name is too dark	Dennis Valverde Pacheco	Erick Vargas	  Verified	Fixed	28/Mar/11	13/May/11
	TOTALCTRL-91	On landscape mode there should be no bottom bar	Dennis Valverde Pacheco	Erick Vargas	  Verified	Fixed	28/Mar/11	13/May/11

Figure 9 iPhone Vidcam bugs fixed

Also is important verify that all new features are resolved. The image 7 shows anothers bugs fixed and the result of the new features.




	TOTACTRL-106	Bottom toolbar misplaced after tap twice on camera stream on multicam	Dennis Valverde Pacheco	Erick Vargas	  Verified	Fixed	06/Apr/11	13/May/11	06/Apr/11
	TOTACTRL-107	Tap on timeout doesn't work in multichannel mode	Dennis Valverde Pacheco	Erick Vargas	  Verified	Fixed	13/Apr/11	13/May/11	
	TOTACTRL-108	Quick select goes from 4 to 8 camera directly in multichannel mode	Dennis Valverde Pacheco	Erick Vargas	  Verified	Fixed	13/Apr/11	13/May/11	
	TOTACTRL-110	Working cameras give timeout on multichannel mode	Dennis Valverde Pacheco	Erick Vargas	  Verified	Worksforme	13/Apr/11	13/May/11	
	TOTACTRL-111	Application shows gray screen	Dennis Valverde Pacheco	Erick Vargas	  Verified	Fixed	13/Apr/11	13/May/11	
	TOTACTRL-117	Create multichannel settings	Dennis Valverde Pacheco	Erick Vargas	  Reopened	Unresolved	27/Apr/11	19/May/11	
	TOTACTRL-118	TOTACTRL-117 / Update settings screen on iPhone	Dennis Valverde Pacheco	Erick Vargas	  Closed	Done	27/Apr/11	11/May/11	
	TOTACTRL-120	TOTACTRL-117 / Default number of cameras setting iphone	Dennis Valverde Pacheco	Erick Vargas	  Closed	Done	27/Apr/11	11/May/11	
	TOTACTRL-122	TOTACTRL-117 / View camera group setting iphone	Dennis Valverde Pacheco	Erick Vargas	  Closed	Done	27/Apr/11	11/May/11	
	TOTACTRL-124	Add multichannel option in autostart	Dennis Valverde Pacheco	Erick Vargas	  Closed	Done	29/Apr/11	11/May/11	
	TOTACTRL-146	Landscape mode does not have next/prev group buttons	Dennis Valverde Pacheco	Erick Vargas	  Resolved	Fixed	20/May/11	24/May/11	20/May/11

Figure 10 iPhone Vidcam bugs fixed and new features done

5. Conclusions

In the end to this internship is very important end with several conclusions or recommendations about all activities and experiences lived in this important stage of the carrier of anyone student.

In this section, these conclusions will be mentioned in three different topics: the objectives of the projects, documents and personal experiences.

5.1 Objectives of the projects

About these objectives, the results are satisfactory; each objective planned was developed with very positive results.

In the first stage of the internship, the goals were prepare one specification of Krill project and start with the research of new technologies. In this process the development team learned about tools and technologies not covered in the university like Spring (java), weka (machine learning, discarded in the project), Solr(classification server).

Other important aspect is the specification process in the enterprise; in this case, the specification was focused just in the more important aspects of the project: description, goals, scopes and requirements.

This “short” documentation contrasts with the educational model that suggests long documentations and repetitive processes.

About iPhone Vidcam, the goals were achieved satisfactorily, each objective, task, bug to fix or new feature were developed at time, several quality assurance tests showed some errors but they were solved.

The first week in the project was a little complicated because was necessary training in iPhone applications development and Objective C, however previous knowledge in Android development did it easier.

Because the application is for a client in United States, the development plan must exactly fulfill, however, any problem in the development and the project was delivery to the client without problems.

In conclusion about the objectives of the projects is important do mention to the research and team work, these aspects were the key to achieve this goals, is very important be professional and work hard.

5.2 Documents and products

About documents and products is very interesting the difference between enterprise documents and the project documentations in the university, while in the university the students need to write long and bored documents, in the enterprise the documents are smaller just with the main information.

In the enterprise the developer team just wrote one document, this document is similar to the first enterprise report. This unique document contain a description, target market of the project, goals, scopes, requirements and others sections. This document is a template of the Avantek and was used in the Krill project.

This document is very simple, but just contains the most relevant information that the developer needs for start with the solution.

In iPhone Vidcam was not necessary wrote any document, this project is very advanced and the process only included program features already specified.

The regular documentation in this internship has been the three main reports and the weekly reports, this documents also has been useful to control the progress in the internship period.

5.3 Personal experiences

Many experiences has been lived in this internship, new technologies, new responsibilities and new environment, all it are aspects very different to the student's life.

When the people are studying several concepts are explained without the market experience, for example, in the university the specification process is long and bored, the documents include many sections unnecessary, in the real life the client needs a solution and a long specification or requirements could delay the solution.

The contact with the client is a aspect very important, when the student develop a university project, is possible don't end it, and 70, 80, 90 and 100 are accepted scorers, but when exist a client paying the only accepted score is 100.

The participation in the "Comunidad de Desarrollo de Aplicaciones móviles del Tecnológico de Costa Rica" help me to understand the iPhone developing, the training time was reduced to just one week.

Any course is more important than other, the most important course is the extracurricular activities, because is here where the student develop new skills.

The education is the base of the progress, if all people study or learn new things every day the world would be a better place.

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